

WINDS.

The prevailing winds for September, 1892, are shown on Chart II by arrows flying with the wind. In New England and on the northeastern slope of the Rocky Mountains the winds were generally from southwest to northwest; in the middle and south Atlantic and Gulf states, over the Florida Peninsula, and in the Ohio Valley and Tennessee, from northeast to southeast; in the lower lake region, in the upper lake region, except in Upper Michigan, in the upper Mississippi valley, and over the plateau region, from southeast to southwest; in Upper Michigan, from the northwest; in the extreme northwest, from west to north; in the Missouri Valley and on the middle-eastern slope of the Rocky Mountains, from southeast to south; on the southeastern slope of the Rocky Mountains, from south to west; on the north Pacific coast, westerly; on the middle and south Pacific coasts, from west to north; in the central valleys of California, from southeast to south.

HIGH WINDS (in miles per hour).

Wind velocities of 50 miles, or more, per hour were reported at regular stations of the Weather Bureau as follows: 5th, 60, s., at Fort Canby, Wash. 10th, 50, n., at Amarillo, Tex. 13th, 54, nw., at Cleveland, Ohio. 22d, 24th, and 25th, 60, s., at Fort Canby, Wash. 26th, 52, sw., at Woods Holl, Mass.; 51, nw., at Oswego, N. Y. 27th, 100, nw., at Mount Washington, N. H.

LOCAL STORMS.

3d.—At Dodge City, Kans., a heavy thunderstorm prevailed during the afternoon and evening; two houses were struck, two persons were stunned, and telegraph wires were burned out by lightning.

6th.—During a heavy thunderstorm in the evening a building was struck by lightning at Bismarck, N. Dak.

7th.—In the early morning a man was killed by lightning near Marshall, Iowa. A barn was struck by lightning and burned at Cadiz, Wis.

8th.—A sudden and severe thunder and wind squall in the evening caused some damage about Homer, La. At Nashville, Tenn., a heavy rain and thunder storm, with hail, began 4.12 p. m. and continued one hour; lightning struck in several places, and 2 persons were stunned by lightning.

9th.—A violent thunder, wind, and rain storm visited Marion, Ind., in the evening; a large building was destroyed, killing 2 persons. Severe thunderstorms occurred in southern Wisconsin in the morning. During a thunderstorm at Sparta, Wis., in the early morning some damage was caused by lightning. At Red Wing, Minn., a thunderstorm began 6.30 p. m., 9th, and ended during the early morning of the 10th; at 10.28 p. m., 9th, the wind reached a velocity of 42 miles per hour, and small hail fell. The heaviest thunderstorm of the season was reported at Dubuque, Iowa, in the early morning; the storm appeared to hover over that locality about 4 hours, no decided movement being noted; commencing at 3 a. m. hail about the size of walnuts fell for 15 minutes, covering the ground to a depth of 6 inches, in places; corn was severely damaged, and several buildings were struck by lightning.

10th.—At Alfred Center, N. Y., a barn was struck by lightning and burned. Damage by lightning was reported in western New York, northern Ohio, and northern Illinois. At 3 a. m. a heavy thunder, rain, and hail storm moved eastward over Madison, Wis.; tobacco was damaged. During a thunderstorm in the early morning at La Crosse, Wis., the wind reached a velocity of 36 miles per hour, and several houses were struck by lightning. Severe thunder and rain storms

occurred at Davenport, Iowa., in the afternoon and evening. Thunder and rain storms caused considerable damage in central Missouri. At Yates Center, Kans., a barn was struck and stock killed by lightning.

13th.—High southeast winds prevailed on Long Island Sound and heavy wind caused damage in New York. At Blue Knob, Pa., the wind reached an estimated velocity of 50 to 60 miles per hour in the afternoon, attended by heavy rain. Damage was caused about Ashland, Va., by a thunderstorm. Wind and rain damaged property and crops about Petersburg, Va. Four persons were reported killed by a severe storm at Halifax, N. C. A destructive local storm moved northeast over Newberry county, S. C., in the afternoon; the path of the storm was about 300 yards in width and 10 miles in length, and its passage was attended by destruction of property and crops. Heavy gales prevailed over the Great Lakes, causing damage of a minor character. At Cleveland, Ohio, the wind reached a velocity of 54 miles per hour from the northwest.

14th.—Hard gales continued over Long Island Sound. At Buffalo, N. Y., the wind reached a velocity of 48 miles per hour from the southwest at 2.45 p. m. A heavy thunder and rain storm moved northeast over Petersburg, Va., at 12.30 a. m.; 2 persons were drowned, and property was destroyed to the estimated value of \$1,500.

20th.—A heavy rainstorm, with some thunder and lightning, visited Wilmington, N. C., in the morning; 4.14 inches of rain fell in 6 hours, damaging property and flooding streets.

21st.—Heavy hailstorms were reported in the afternoon in northern and northeastern Nebraska.

22d.—A severe thunderstorm prevailed at Manistee, Mich., from 9 to 11.30 p. m. During the storm a small tornado moved east-northeast south of the Weather Bureau station, damaging property to the estimated value of \$10,000. In the early morning a barn 5 miles south of Cresco, Iowa, was struck by lightning and burned.

23d.—In the afternoon a cloudburst caused considerable damage in the northern part of Lancaster county, Pa. At Port Huron, Mich., a heavy thunderstorm began in the early morning and ended 8.30 a. m.; the city hall building was struck by lightning, and a number of trees were blown down.

24th.—Destructive local storms were reported in Connecticut; some damage was caused by lightning. Severe storms were reported in central New York. At Gloversville, N. Y., a mill, valued with contents at \$25,000, was struck by lightning and burned.

25th.—At North Hammond, N. Y., a thunderstorm, with hail and heavy rain, occurred in the evening; lightning struck in several places, and at Ogdensburg a steamer was struck by lightning and burned. A severe thunderstorm from the west prevailed at Ithaca, N. Y., from 9.30 to 10.30 p. m. At Somerville, N. J., an unusually severe thunderstorm, with hail and heavy rain, began in the early morning; one house was struck by lightning. A church was struck by lightning at Lebanon, N. J. Near Alloway, N. J., a barn was struck by lightning and burned. Considerable damage was caused about Ellishboro, N. J., by hail. Destructive thunder and hail storms were reported in Delaware and southeastern Pennsylvania. At Pittsburg, Pa., thunder and rain storm began 7.25 p. m.; the wind reached a velocity of 38 miles per hour from 7.40 to 7.48 p. m., and an extreme velocity of 48 miles, causing much damage to property. At Blue Knob, Pa., a thunderstorm began 7.10 p. m., and continued during the night; the wind reached an estimated velocity of 60 miles per hour, blowing down houses, trees, etc. At Harrodsburg, Ky., a thunder, rain, and wind storm began 8.30 p. m., and continued during

the night. At Cheboygan, Mich., a thunderstorm began in the early morning and ended 7.45 a. m.; a barn was struck by lightning and burned. A thunderstorm, with exceptionally high wind, visited Thornville, Mich., in the afternoon.

26th.—Severe thunderstorms occurred in New England in the early morning. At Madison, Me., a set of farm buildings were destroyed. In New Hampshire and Vermont a number of buildings were struck by lightning and burned. At Taunton, Mass., a barn was struck by lightning and burned. At Nahant, Mass., several houses were unroofed, and a number of vessels dragged anchor and parted cables. At Narragansett Pier, R. I., a thunderstorm prevailed from 5.30 to 10 a. m. At New Haven, Conn., high wind began 10 a. m., causing damage of a minor character. At Woods Holl, Mass., the wind reached a velocity of 52 miles per hour from the southwest. High northwest winds prevailed over New York. In Brooklyn, N. Y., several unfinished buildings were blown down, and two boys and a man were killed. Many

small vessels were driven ashore or sunk. At Oswego, N. Y., the wind reached a velocity of 51 miles per hour from the northwest. Damage was caused by heavy wind about Dyerberry, Pa. At Lodi, Cal., a thunderstorm occurred between 8 and 11 p. m.; east of that place, at Clements, high wind, heavy rain, and hail were reported, and a man was killed by a falling tree.

27th.—The night of the 26–27th the wind reached a velocity of 100 miles per hour from the northwest, and snow fell on the summit of Mount Washington, N. H. An exceptionally heavy rain and thunder storm was reported at Brunswick, Ga., in the morning; streets were flooded, causing great damage to property. A heavy thunderstorm from the northwest visited Columbia, Mo., in the evening.

28th.—Stock was killed by lightning at Irena, Mo., and damage was caused by lightning at Clinton, Mo.

29th.—A severe rain, wind, and hail storm visited Eagle Pass, Tex., about 6 p. m.

INLAND NAVIGATION.

STAGE OF WATER IN RIVERS.

The following table shows the danger-points at the various river stations; the highest and lowest stages for the month, with the dates of occurrence, and the monthly ranges:

Heights of rivers above low-water mark, Sept., 1892 (in feet and tenths).

Stations.	Danger-point on gauge.	Highest water.		Lowest water.		Monthly range.
		Height.	Date.	Height.	Date.	
<i>Red River.</i>						
Shreveport, La.	29.9	4.6	19, 20	1.7	15, 30	2.9
<i>Arkansas River.</i>						
Fort Smith, Ark.	22.0	6.2	2	1.5	30	4.7
Little Rock, Ark.	23.0	9.2	4	6.3	29, 30	2.9
<i>Missouri River.</i>						
Fort Buford, N. Dak. ....	.....	7.0	1	4.9	29	2.1
Bismarck, N. Dak. ....	.....	2.5	1, 2, 8	1.8	26–30	0.7
Pierre, S. Dak.	14.0	1.6	1–4	0.5	30	1.1
Sioux City, Iowa	18.7	6.4	1	5.1	30	1.3
Omaha, Nebr.	18.0	7.8	1, 2	5.9	30	1.9
Kansas City, Mo.	21.0	8.1	1	5.8	29, 30	2.3
<i>Mississippi River.</i>						
Saint Paul, Minn.	14.0	4.1	14	2.9	28	1.2
La Crosse, Wis.	11.8	3.6	15–17	2.4	30	1.2
Dubuque, Iowa	16.0	4.8	20	3.5	30	1.3
Davenport, Iowa	15.0	3.2	11, 12, 16–18	2.2	9	1.0
Keokuk, Iowa	14.0	3.5	1	2.2	30	1.3
Hannibal, Mo.	17.0	4.8	1	3.4	9, 10, 30	1.4
Saint Louis, Mo.	30.0	9.6	1	6.8	30	2.8
Cairo, Ill.	40.0	10.1	1	7.0	30	3.1
Memphis, Tenn.	33.0	7.7	1	5.1	30	2.6
Vicksburg, Miss.	41.0	11.2	1	5.3	30	5.9
New Orleans, La.	13.0	5.2	12	3.5	21–23	1.7

Heights of rivers—Continued.

Stations.	Danger-point on gauge.	Highest water.		Lowest water.		Monthly range.
		Height.	Date.	Height.	Date.	
<i>Ohio River.</i>						
Parkersburg, W. Va.	38.0	5.0	2	1.9	28	3.1
Cincinnati, Ohio	45.0	7.2	7	4.8	19, 20	2.4
Louisville, Ky.	24.0	4.1	8, 9	3.4	22, 23	0.7
<i>Cumberland River.</i>						
Nashville, Tenn.	40.0	2.3	5, 6	1.1	30	1.2
<i>Tennessee River.</i>						
Chattanooga, Tenn.	33.0	4.6	17	1.3	5	3.3
Knoxville, Tenn.	29.0	.....		.....		.....
<i>Monongahela River.</i>						
Pittsburg, Pa.	29.0	6.2	12, 18	4.8	23	1.4
<i>Savannah River.</i>						
Augusta, Ga.	32.0	20.8	23	5.9	10, 12	14.9
<i>Willamette River.</i>						
Portland, Oregon	15.0	3.6	6, 7	1.2	30	2.4
<i>Susquehanna River.</i>						
Harrisburg, Pa.	17.0	2.9	1	1.1	29, 30	1.8
<i>Alabama River.</i>						
Montgomery, Ala.	48.0	7.2	25	1.8	12	5.4

At Chattanooga, Tenn., navigation on the Tennessee River was suspended on the 9th on account of low water; on the 15th, 16th, and 17th the river rose slowly, and on the 17th navigation opened on the upper Tennessee; on the 18th the river was falling; on the 21st navigation was again closed on account of low water; on the 25th and 26th the river rose slowly.

ATMOSPHERIC ELECTRICITY.

THUNDERSTORMS.

Description of the more severe thunderstorms of the month is given under "Local storms."

Thunderstorms were reported as follows: East of the Rocky Mountains they were reported in the greatest number of states, 24, on the 26th; in 23 on the 9th and 25th; in 15 to 20 on the 4th, 5th, 7th, 8th, 10th, 12th, 13th, 19th, 20th, and 21st; in 10 to 14 on the 3d, 6th, 11th, 14th, 22d, 23d, 24th, and 27th; in 5 to 9 on the 1st, 2d, 16th, 17th, 18th, 28th, 29th, and 30th. The only date on which they were reported in less than 5 states was the 15th, when they were noted in Florida and New York.

East of the Rocky Mountains thunderstorms were reported on the greatest number of dates, 30, in Florida; on 15 to 20 in Georgia, Iowa, Michigan, Mississippi, North Carolina,

Pennsylvania, and Wisconsin; on 10 to 14 in Alabama, Illinois, Indiana, Kansas, Kentucky, Louisiana, Missouri, Nebraska, New York, Ohio, South Carolina, South Dakota, Tennessee, and Texas; on 5 to 9 in Arkansas, Maryland, Minnesota, Montana, North Dakota, Oklahoma, Virginia, and West Virginia; and on 1 to 4 in Connecticut, District of Columbia, Maine, Massachusetts, New Hampshire, New Jersey, Rhode Island, and Vermont.

West of the Rocky Mountains thunderstorms were reported in Arizona on the 1st, 5th to 10th, 24th, 27th, and 30th; in California, on the 7th, 8th, 18th, 24th, 25th, 26th, 28th, 29th, and 30th; in Colorado on the 1st to 4th, 18th, 19th, 20th, 28th, and 29th; in Idaho on the 29th; in Nevada on the 1st, 2d, 9th, 14th, 19th, 24th, 25th, 26th, 28th, 29th, and 30th; in New Mexico on the 4th, 5th, 7th, 9th, and 10th; in Utah on the 2d, 26th, 28th, 29th, and 30th; in Washington on the